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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/756,442 | 01/08/2001 | Masayuki Kimishima | ADV A223.001 AUS | 5548 |

7590 09/16/2003
MURAMATSU & ASSOCIATES
Suite 225
7700 Irvine Center Drive
Irvine, CA 92618

EXAMINER

NGUYEN, SIMON

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2685

DATE MAILED: 09/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/756,442

Applicant(s)

KIMISHIMA, MASAYUKI

Examiner

SIMON D NGUYEN

Art Unit

2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-10 is/are allowed.
- 6) ☐ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Dobrovolny (4,823,400).

Regarding claim 1, Li discloses a single balanced mixer, in a prior art, for converting an input RF signal to an IF signal by mixing the input RF signal with a local signal (fig.2), comprising: means for producing two local signals of same amplitude and opposite phase (column 2 lines 14-16), a pair of mixing elements (diodes D1, D2) each receiving a corresponding one of the two local signals (fig.2); a pair of strip lines for transmitting the input RF signal to the mixing element (fig.2, column 2 lines 8-10, 24-27, 46-55); wherein one end of each of the strip lines is connected to one another at a point where the input RF signal is supplied and other end of each of the strip lines is connected to the corresponding mixing elements (fig.2), and wherein a length of each of the strip lines is one fourth of a wave length of the IF signal line (column 2 lines 8-10, 24-27, 46-55).

Regarding claim 5, Li discloses the mixing elements are diodes (fig.2).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over participated by Li et al. (5,774,801) in view of Nightingale (4,607,394).

Regarding claim 2, Li discloses the local signals of same amplitude and opposite phase are transmitted to the mixing element through strip lines (column 2 lines 4-16). However, Li fails to disclose the mixer is formed on a planar surface of a substrate.

Nightingale discloses a single balanced mixer where the mixer is formed on a planar surface of a substrate (column 5 lines 1-4). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the Li system with the teaching of Nightingale to support patterned conductors and electronic components in order to reduce intermodulation distortion.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over participated by Li et al. (5,774,801) in view of Erickson (5,862,466).

Regarding claim 3, Li disclose the local signals having the same amplitude and opposite phase (column 2 lines 14-16). However, Li does not specifically disclose the IF signals of the same amplitude and opposite phase.

Erickson discloses a balanced mixer having mixing elements (72, 74 of fig. 3), wherein the mixing elements produce IF signals of the same amplitude and opposite phase. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the Li system with the teaching of Erickson to control the phase shift of the signals in order to stabilize the mixer.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over participated by Li et al. (5,774,801) in view of Dobrovolny (5,027,163).

Regarding claim 4, Li fails to disclose the mixing elements are transistors.

Dobrovolny discloses a single balanced mixer where the mixing elements are transistors (22 and 26 fig. 1, column 2 lines 30-60). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the Li system with the teaching of Dobrovolny to use over a different frequency range in order to support different applications.

Allowable Subject Matter

7. Claims 6-10 are allowed.

Regarding claim 6, the Li reference disclose a single balanced mixer having means to receive the local signals, producing two local signal of same amplitude and opposite phase, a pair of mixing elements, a filter for filtering the IF signals, a pair of strip lines for transmitting the input RF signal to the mixing elements, wherein the strip lines is one quarter of wavelength.

The Dobrovolny reference discloses a single balanced mixer having a hybrid coupler (62 of fig.2) for receiving two local signals.

These references fail to disclose a second hybrid coupler for combining the IF signals from the IF filters to produce the IF signal of the same phase.

Regarding claims 7-10, these claims are allowed as being dependent upon independent claim that has been allowed.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Simon Nguyen whose telephone number is (703) 308-1116. The examiner can normally be reached on Monday-Friday from 7:00 AM to 4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F. Urban, can be reached on (703) 305-4385.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 306-0377.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Or faxed to:

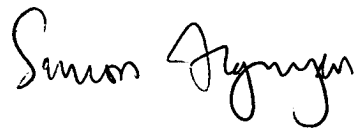
(703) 872-9314, (for formal communications intended for entry)

Hand-delivered response should be brought to Crystal Park II,

2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Simon Nguyen

September 7, 2003

A handwritten signature in black ink, appearing to read "Simon Nguyen". The signature is written in a cursive, flowing style with a large initial "S" and a long, sweeping underline.